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# MEDICAL NEWS LETTER

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## MEDICAL NEWS LETTER

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The U. S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be, nor are they, susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

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Change of Address

Please forward changes of address for the News Letter to: Commanding Officer, U. S. Naval Medical School, National Naval Medical Center, Bethesda 14, Md., giving full name, rank, corps, and old and new addresses.

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The issuance of this publication approved by the Secretary of the Navy on 28 June 1961.

HISTORICAL FUND  
of the  
NAVY MEDICAL DEPARTMENT

A committee has been formed with representation from the Medical Corps, Dental Corps, Medical Service Corps, Nurse Corps, and Hospital Corps for the purpose of creating a fund to be used for the collection and maintenance of items of historical interest to the Medical Department. Such items will include, but will not be limited to, portraits, memorials, etc., designed to perpetuate the memory of distinguished members of the Navy Medical Department. These memorials will be displayed in the Bureau of Medicine and Surgery and at the National Naval Medical Center. Medical Department officers, active and inactive, are invited to make small contributions to the fund. It is emphasized that all donations must be on a strictly voluntary basis. Funds received will be deposited in a Washington, D. C. bank to the credit of the Navy Medical Department Historical Fund, and will be expended only as approved by the Committee or its successor and for the objectives stated.

It is anticipated that an historical committee will be organized at each of our medical activities. If you desire to contribute, please do so through your local historical committee or send your check direct, payable to Navy Medical Department Historical Fund, and mail to:

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Measles as a Universal Disease\*

G. S. Wilson MD, F. R. C. P., Director, Public Health Laboratory Service, England and Wales, London, England.

There is some doubt about the origin of the name measles. Most probably it comes from the Latin term misellus or misella, itself a diminutive of the Latin miser meaning miserable which was given to the inmate of a medieval leper house. It was used in this way for the sufferer from various skin eruptions and sores by Langland in the 14th century in his poem, "The Vision of Piers, the Ploughman." Shakespeare also used it in Coriolanus, indicating, however, that the sores were infectious. It was John Gaddesden who identified—quite unjustifiably—the nonspecific leprous sore with the disease called in Latin morbilli. This term was a diminutive of morbus, meaning disease, which referred to the major disease, bubonic plague, morbilli being a minor disease. In the anglicized form of misellus, namely mesels, the word henceforward was applied not to the sufferer of ill-defined skin lesions but to the specific disease morbilli. The pronunciation of the word measles presents no difficulty to Anglo-Saxons, but on the Continent it may take strange forms, such as in Southeast Europe—"mee-ah-slays."

No accurate information is available on the early history of measles. The disease was certainly confused with smallpox, and though the Arabian physician, Rhazes, is generally credited with having drawn a distinction in the 10th century between the two diseases, there is no doubt that he and the Arabian school generally regarded them as intimately associated with each other. By the beginning of the 17th century, the demarcation between them was becoming clearer. In fact, in the annual bills of mortality drawn up by the Parish Clerks of London in 1629, smallpox and measles were listed separately. The observations of the physician and the epidemiologist, Thomas Sydenham, finally cleared up what obscurity was left. Subsequently, when confusion has existed it has been between measles and scarlet fever or between measles and rubella. Fortunately, owing to the work of Enders and colleagues, it can now be said in the face of clinical doubt that measles is a disease caused by the measles virus and by that alone.

The mortality caused by measles has varied greatly during the past three centuries. In the London epidemic of 1674 it caused more deaths in the first 6 months of the year than smallpox. In the 18th century in Britain measles was a comparatively mild disease, but early in the 19th century it again became more serious. The explanation offered for this by Dr. Robert Watt, a Scottish physician, was that it was usurping the place previously occupied by smallpox which was now being prevented by vaccination. According to him, smallpox had previously killed off the weakly children so that measles—when it came later—caused only a mild disease in the more lusty survivors. In the absence of this

\* Presented at the International Conference on Measles Immunization, National Institutes of Health, Bethesda, Md., November 7 - 9, 1961. Chairman, Abraham Horwitz MD.

selective effect of smallpox, the weakly children were now being exposed to measles which assumed in them a far more serious character than previously.

The substitution or usurpation of one zymotic disease by another is a phenomenon well recognized by epidemiologists and is still relevant to the world today. As Creighton pointed out, the replacement in Britain of plague by typhus, of typhus by smallpox, and of smallpox by measles was accompanied by a transfer of mortality from the older ages to the younger. Probably several factors accounted for this, of which the chief was increase in the density of population; but whatever the causes the position has now been reached that, with the exception of tuberculosis, influenza, and hepatitis, all the zymotic diseases cause their highest mortality in the first few years of life.

The attack rate in measles is higher than for any other infectious disease. In virgin populations that have not experienced a previous outbreak, susceptibility appears to be almost complete. In the epidemic in southern Greenland, for example, observed by Christensen and colleagues, the attack rate was 99.9%, and in that observed by Peart and Nagler among the Canadian Indians and Eskimos of the Eastern Arctic region, it was again over 99%. In populations such as those in Europe and the United States that have been in contact with the disease for some centuries, the secondary attack rate on susceptible members over one year of age is usually between 80% and 90%.

The difference between the 100% attack rate in virgin populations and the 85% attack rate in more civilized populations raises the question of genetic immunity. Is the present increased resistance of the people of Europe and America due to the elimination of the more susceptible elements of the population during previous epidemics? Before attempting to answer this question, there must be considered the notification and mortality rates of measles.

During the last 50 years or so, the mortality of all the infectious diseases has fallen—in some instances almost dramatically. The notification rates have also fallen, though not so rapidly. But measles presents a striking exception to this general rule. At the beginning of this century the mortality from measles in England and Wales was 318 per million living at all ages. It is now 2 per million. In contrast to this, the number of cases of measles seems to be as high as ever. Indeed, in the present year a larger number of cases have been reported in England and Wales than in any year since the disease became notifiable in 1939. In 1961, until the end of August, nearly 750,000 cases had been recorded in a population of just over 10 million under 15 years of age.

Thus, this is a striking anomaly of a high degree of immunity to death associated with an apparent lack of immunity to attack. In this respect, as in certain others, measles is unique. If the immunity to death is partly due to an inherited resistance, why is there no corresponding immunity to attack?

The author offers the thesis that there is some degree of inherited immunity to attack, but that it is incommensurate with that against death. Evidence if based largely on the difference between attack rates on civilized and virgin populations. Why is it that in Britain 15% of children without a history of measles escape attack when they are exposed to close contact with a case? The obvious answer is that they must possess some natural immunity. It may be

demonstrated that these apparently insusceptible children do, in fact, contract the disease but in a latent form, and as a result become latently immunized. The suggestion that this happened was put forward many years ago by Stocks and Karn, by Halliday, and more recently by Enders. The most suggestive evidence in its favor was elicited by the School Epidemics Committee of the Medical Research Council. In seven public schools kept under close observation, pairs of epidemics of measles occurred at an interval of 2 to 3 years. In the first epidemic, the attack rate on susceptible boys or girls ranged from 38.3% to 75.4%. Again, in the second epidemic, the attack rate on those who were exposed for the first time ranged from 50.0% to 82.4%. But among susceptible pupils who had passed through the first epidemic without contracting the disease and were still at school when the second epidemic broke out, the attack rate was only 0.0% to 13.3%. This enormous reduction in susceptibility suggests not only that a high proportion of susceptibles in the first epidemic had become latently immunized, but that this immunity had lasted for at least 2 to 3 years. It is, of course, legitimate to argue that these children escaped clinical attack by virtue of a natural immunity, and that they did not suffer from even a latent infection. The general evidence is against this interpretation, but now that the development of antibodies can be followed in the laboratory, there should be little difficulty in settling the question. The small amount of evidence so far available in this respect seems to support the writer's thesis. Whichever interpretation is correct, it may be said that in Britain probably 15% or so of children possess a sufficient degree of genetic immunity to render them resistant to a clinical attack of measles. The enormous discrepancy, however, between resistance to attack and resistance to death still remains and constitutes a phenomenon displayed by no other disease.

Measles is a truly universal disease. It is present in all continents and among all peoples. Unlike influenza or cholera which cause pandemics from time to time, measles is always pandemic. In individual countries, however, its prevalence varies from time to time and from place to place. In large cities it frequently shows a biennial peak, depending presumably on the accumulation of susceptible persons. Incidence of the disease is usually highest in the second, third, and fourth years of life. When, as the result of new births, the susceptible child population has reached a figure of 30% to 40%, an epidemic breaks out and continues until the susceptible population has been reduced to about one-half. After that, there is comparative quiet until a fresh lot of susceptible children has accumulated. This, of course, is a generalized picture. In smaller communities, epidemic spread may bear little relation to the proportion of susceptible subjects. This was the experience of the School Epidemics Committee, although it is true to say that an outbreak seldom occurred in a school unless the proportion of susceptible children constituted at least 15%. Curiously enough, measles was more likely than any other disease to assume epidemic proportions when infection was introduced into a school, and that spread was more frequent among boys than among girls, even when the proportion of the susceptible population was higher among the girls.

Infection seems to occur entirely from case to case. So far as present information goes, healthy carriers are unknown. It follows that, if the disease

is introduced after a long interval of freedom into an isolated or closely circumscribed community, it attacks practically every susceptible person and then dies out. The immunity it leaves behind is almost absolute. Genuine second attacks—not those due to rubella or ECHO virus 9, or some similar infection—are a rarity. In the outbreak in the Faroe Islands in 1846 the survivors of a previous epidemic 65 years before were found to be still immune. It is doubtful whether the immunity resulting from an attack of any other disease is quite so strong and persistent.

#### Vaccination

When it is possible neither to inactivate or sterilize a disease at its source nor to interfere with its transmission, reliance must be placed on increasing the resistance of contacts by artificial immunization. In measles, the patient is usually infectious before the diagnosis can be made. Isolation of the patient, therefore, comes too late to inactivate the infection at its source. Again, transmission of the infectious material from the nose and throat by droplets and other particles carried through the air is notoriously difficult to prevent or control, particularly in infants and young children. Therefore, the conclusion must be that to protect against measles artificial immunization in some form is the most hopeful method.

This International Conference was called to consider immunization against measles. It is fitting, therefore, that in introducing measles as a universal disease, the subject of vaccination should be referred to. Certain general principles should govern the policy of vaccination against any disease.

(a) The vaccine should be harmless to the healthy child. In practice, no vaccine has yet been devised that has not occasionally given rise to a severe and sometimes fatal reaction. The risk is much higher with some vaccines than with others. Unfortunately, for any given vaccine the risk can be assessed only by experience.

(b) The disturbance caused by vaccination should not be greater than that caused by the disease itself. There is no doubt that, in the prevention of smallpox, the febrile eruption that follows primary vaccination is far less severe than that caused by the natural disease. In measles, however, this is not so clear. Although at one time measles had a high case fatality rate resulting in serious mortality, it has now in many parts of Europe and America become so mild that death is exceptional. In 1959, for example, an epidemic year in England and Wales, the total deaths from measles numbered only 98 in a total population of 45 million. Under these conditions, is the disease worth preventing, or should there be concentration on shielding infants and very young children from the risk of infection and protecting them with y-globulin when this is impossible? It is difficult to answer this question without knowing more exactly how much permanent damage measles does to the healthy child. In the tropics, of course, the position is different. There, the case fatality rate for measles is high and a much stronger case can be made out for vaccination.

(c) If the vaccine has to be given to a high proportion of the susceptible population, then it must be easy to administer. Current practice is to vaccinate children against smallpox, whooping cough, diphtheria, tetanus, poliomyelitis, and in many countries, tuberculosis. The successful addition of measles vaccine to this galaxy of prophylactic agents will be possible only if it can be given in a simple painless manner.

(d) There must be reason to believe that vaccination will prove of benefit to the herd as well as to the individual. One objection raised to attempts to eradicate tuberculosis by segregation and similar measures is that the resulting community would be left a prey to fresh infection whenever it was introduced. This, as Burnet pointed out, is almost certainly untrue. The present high level of natural resistance to tuberculosis has been gained as the result of selection over several hundred years, and to lose it would take an equally long time even if immunity were not reinforced by vaccination. With measles the position is different. Genetic immunity, as has been seen, is not sufficiently high to protect more than a small proportion of the population against attack. Hence, if the masses of people are to be protected against the disease, a high proportion would have to be vaccinated. How high this proportion would have to be is impossible to say, but if the chain of infection from case to case is to be broken completely, it would have to be very high indeed—perhaps 90% or more. If the policy of vaccination was successful and measles eradicated, new generations growing up would still be highly susceptible and, if they were to escape measles introduced into the country from one source or another, would have to be vaccinated in early life. Experience, however, has shown that mothers are reluctant to have their children vaccinated against a nonexistent disease. The chance, therefore, of insuring a continuing mass immunity by vaccination would seem to be small.

(e) Lastly, the degree of immunity conferred by vaccination should be sufficiently solid to obviate the need of frequent revaccination.

The author makes it clear that he is not arguing for or against vaccination against measles. He desires to define in general some of the problems that attend vaccination against any disease and some of those which concern measles in particular.

\* \* \* \* \*

#### Peptic Ulcer Disease in Young Males \*

William M. Lukash MD, Francisco R. Sifre MD, and Paul T. Moore MD. Illinois Med, February 1962.

Peptic ulcer disease is probably the most frequent organic gastrointestinal problem affecting man. It has been stated that from 5% to 10% of most populations develop ulcers (1). Duodenal ulceration occurs at any age, but is most frequently found in the 30 to 50-year age group (1, 2,), whereas gastric ulceration seems to occur most frequently in the 50 to 70-year age group (3). The

\* Medical Service, U.S. Naval Hospital, Great Lakes, Ill.

present study reviews some clinical aspects of peptic ulcer disease in a young male population under age 21. It had become apparent to the authors that such a study might provide interesting data in comparing the disease in this group with that in the general population.

#### Material

All patients under 21 years of age who were hospitalized for peptic ulcer disease at the U.S. Naval Hospital at Great Lakes during the 5-year period 1955 to 1960 were selected for study. There were 165 male patients with an age range of 17 to 21 years, average of 19.3 years.

These cases represent a selected group inasmuch as all patients were in active Naval service when admitted to the hospital. On the other hand, the authors believe they may be regarded as representative of this age group as seen in general clinical practice since anyone with the disease is unfit for active Naval duty and is hospitalized. However, they do not necessarily represent the most severe or the complicated cases of peptic ulcer disease ordinarily seen at a civilian hospital.

The diagnoses were established roentgenographically by demonstration of an ulcer crater in the stomach or duodenum, by evidence of deformity and irritability of the duodenal bulb, or by surgery.

#### Incidence

As expected, about half the cases of peptic ulcer disease occurred in patients 20 and 21 years old. There were 5 cases of gastric ulcer and 160 cases of duodenal ulcer. The usually reported ratio of duodenal to gastric ulcers confirmed by radiologic examination is approximately 10 to 1 (4). In the Great Lakes series the ratio was much higher, about 30 to 1. Fifty-three patients had a previous history of peptic ulcer disease at the time of hospitalization. Thus, 32% of cases represented recurrence.

The total hospital stay averaged 45 days per patient. This must be evaluated in light of the fact that military personnel must be considered fit for full active duty before hospital release. Of the 165 patients, 64 (39%) were surveyed from the service because of disability incurred by their disease.

#### Heredity

A high incidence of peptic ulcer disease is found among parents and siblings of ulcer patients. In one reported group of 932 patients, the familial incidence of peptic ulcer was 40%, including 26 sets of twins with ulcers after adolescence (5). In the authors' group, 37 patients (22%) had a familial history. Peptic ulcer disease was found in siblings of patients 11 times (7%), in their fathers 18 times (11%), and in their mothers 8 times (4%).

The principal complications encountered would be bleeding, perforation, and obstruction.

Bleeding. The incidence of bleeding in peptic ulcer disease as determined from other hospital data approximates 30% (6). In the group covered in this article, with 56 episodes of bleeding among 43 patients the incidence was 26%. Bleeding was described as melena in 30 episodes and frank hematemesis in 26 episodes. In 14 patients hemorrhage was severe enough to require blood transfusion; they represented 8.5% of the whole group and 32.6% of those with bleeding. The death rate due to hemorrhage in peptic ulcer disease is reported as about 3% for all cases and about 14% for those with massive hemorrhage (7). In the present series there was one death (7.1%) among the 14 cases requiring transfusions; perforation complicated the problem. Surgery was performed in one case of massive bleeding.

Perforation. This complication has been found in approximately 8% of peptic ulcers (8). A recent report shows that perforation accounted for 22.5% of all admissions for ulcer at the Cook County Hospital, Chicago, Ill., over a 20-year period. In the same series, 37.7% of perforations were gastric, and 62.2% were duodenal. The total mortality rate was 24% which is in keeping with the known severity of such complication (9). It has been stated that peptic ulcer perforation is comparatively rare before the age of 25 years (6). In the Great Lakes study, however, there were 12 cases of perforation, 7.3% of the group. Duodenal perforation occurred in 8, and 4 had gastric perforations, giving a ratio of 2 to 1. It should be noted that of the 5 cases of gastric ulcer in the series, 4 were perforated. This suggests that gastric ulcer disease may represent a more severe condition in this young age group and is subject to a greater incidence of perforation.

Obstruction. Abnormal gastric retention secondary to pyloric obstruction in peptic ulcer disease may be predicted in approximately 5% to 10% of cases. It has been stated that obstruction is the most frequent indication for surgical treatment of peptic ulcer (10). In the current study there were 6 cases of obstruction, giving an incidence of 3.6%; 2 required surgery.

### Surgical Treatment

Surgery for peptic ulcer disease is believed to be indicated in approximately 10% to 15% of patients of all ages (11). In the authors' series, 17 patients (10.3%) had surgery: 12 because of perforation, 2 for pyloric obstruction, and 1 for severe hemorrhage. The remaining 2 patients underwent laparotomy for suspected perforation which was not substantiated at the time of operation. Five partial gastrectomies were performed: 2 for obstruction, 2 for perforation, and 1 for massive hemorrhage. Ten cases had simple closure of a perforation.

### Peptic Ulcer and Corticosteroid Therapy

The increased incidence of peptic ulcer in patients under corticosteroid therapy has been reported (12, 13, 14). In the present series, 6 patients developed an ulcer. Four were under treatment for acute rheumatic fever, 1 for iritis, and 1 for sarcoidosis. All were receiving therapeutic doses of steroids, the lowest

being 40 mg of prednisone daily and the highest 100 mg of prednisone per day. The shortest period of therapy prior to symptoms or signs of peptic ulcer was 23 days, the longest 46 days. None of these patients had a family history of peptic ulcer, no history of previous peptic ulceration, or significant gastrointestinal complaints. One patient had had congenital hypertrophic pyloric stenosis corrected surgically at infancy with no subsequent difficulty. In 2 cases the ulcer was gastric, and in 4 duodenal, in contrast to several reports in which gastric ulcer has predominated (14, 15, 16).

Ulcers developing secondary to steroid therapy have been associated with a high incidence of bleeding and perforation (17). This was borne out in the 6 cases in this study. Three patients required transfusions. Two with gastric ulcer required surgery for resulting perforation. One of these was associated with massive hemorrhage and the patient died despite partial gastrectomy. As indicated by the morbidity and mortality in this small group of "steroid ulcers," it would appear that males under 21 years are very susceptible to the adverse sequelae of this condition.

#### Summary and Conclusions

A clinical study has been made of 165 patients between the ages of 17 and 21 who suffered from peptic ulcer disease. Duodenal ulcer predominated over gastric ulcer in a ratio of 30 to 1. This is probably higher than the ratio in the general population. There was a familial incidence of this disease in 22% of cases.

Incidence of complications from peptic ulcer was bleeding, 26%; perforation, 7.3%; obstruction, 3.6%. These figures compare favorably with the reported incidence of complications in patients with peptic ulcer disease. On the other hand, perforation occurred in 4 of the 5 cases of gastric ulcer, suggesting that gastric ulceration in this age group may be a more severe condition than in the general population.

In the entire series of 165 cases, surgery was indicated in 10.3%. Six patients developed peptic ulcers while on corticosteroid therapy, 4 duodenal, and 2 gastric. They were associated with a high incidence of complications and with one death, tending to indicate that patients in this young age group do not tolerate well this particular type of ulcer.

(The authors wish to acknowledge the assistance of Dr. Merlyn C. F. Lindert, Consultant in Gastroenterology at USNH Great Lakes.)

NOTE: The above paper was presented by LT W. M. Lukash MC USN in a "Symposium on Peptic Ulcer Experiences in the Military—Research and Clinical Aspects" at the Walson Army Hospital, Fort Dix, N.J., on 30 April 1962. LCDR A. I. Kahn MC USN, USNH St. Albans, N.Y., delivered a talk on "Peptic Ulcer and Atypical Variants as Seen in the U.S. Navy." LT T. P. McGrory MC USN, USNH St. Albans, N.Y., gave a paper on "Blood Volume Determinations in Upper Gastrointestinal Hemorrhage." Many outstanding military and civilian speakers appeared on the program. The Research Aspects portion was

chaired by Dr. Stanley C. Skoryna, Director, Gastrointestinal Research Laboratory, McGill University, Montreal, Ontario. Separate papers were presented on experiences and problems with peptic ulcer in the U. S. Army, Canadian Military Hospitals, U. S. Air Force, Royal Canadian Navy, U. S. Navy, Colombian Army, Puerto Rico, and in the Mexican Army.

The Clinical Aspects part of the program was chaired by LTCOL George B. Hamilton, Chief, Department of Medicine, Walson Army Hospital. He was also the Program Director of the Symposium.

The meeting exposed peptic ulcer as a major cause of manpower loss in all branches of the military of the United States and other nations represented.

COL Eddy D. Palmer MC USA, Chief, Gastroenterology Service, Brooke General Hospital, San Antonio, Texas, considers that this symposium was the first comprehensive one of its kind, in which peptic ulcer and its military and economic implications were discussed. It is regretted that limitation of space in the Medical News Letter does not permit reproduction of this outstanding program in its entirety, as well as the names of the many prominent speakers.

—Editor

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### Epinephrine Test A Procedure for Diagnosing Hypersplenism

John J. Horton HM1 USN, Registered Medical Technologist (M. T.)  
Amer J Med Technology, January - February 1962.

**FOREWORD:** CAPT Harold L. Baxter MC USN, Medical Officer of the Station Hospital, U. S. Naval Support Activity, APO 63, San Francisco, Calif., forwarded and endorsed this article as an excellent example of the high degree of

technical competence exhibited by U.S. Navy Hospital Corpsmen. The report concerns work performed at a foreign-shore station, and it is considered that HML Horton deserves a unanimous vote of confidence for such a fine contribution. It is most gratifying to note the same high quality of service and dedication which may be found among all our HC technicians at sea, at home, and abroad. Thanks to improved and expanded Hospital Corps Training Programs, qualified HC Technicians now constitute 53% of the total numerical strength of the Hospital Corps, representing 38 different medical and paramedical technical specialties. This is an all time high percentage strength and reflects the ever increasing U.S. Naval operational requirements for capable specialists. A feature article on the subject is planned for a future Medical News Letter issue.

—Editor

#### Principle

The administration of epinephrine causes the spleen to contract, releasing into the peripheral blood formed elements which have been sequestered in that organ. Therefore, examining those elements at intervals, as compared to a base line, indicates their release by the spleen under epinephrine stimulation which in effect may be considered a nonsurgical biopsy.

#### Purpose

This test is designed as an adjunct in the diagnosis of hypersplenic states. It is a relatively simple procedure.

The patient in this case was an 11-month old male who had severe anemia, requiring supportive transfusions. There was no gross petechial or other hemorrhage to explain the anemia. A gradually decreasing leukocyte count and some fluctuations in the blood platelet count were noted. The patient had marked splenomegaly, and the diagnostic workup indicated chronic arsenic poisoning. Bone marrow puncture was performed, and it was the judgment of the Pathologist that the child's bone marrow was capable of maintaining a considerably higher level of all blood cells in his peripheral circulation than had been found; were it not for the large sequestering spleen it would not have been necessary to give blood transfusions so frequently. Ovalocytosis (oval red blood cells) was found in the child and the trait in the mother.

At this time, it was deemed necessary to perform the epinephrine test to determine what was going on in the patient's spleen. The results are as follows: A base line CBC (consisting of WBC, RBC, reticulocytes and platelets) was recorded just before the test. Epinephrine was administered, and at precise intervals thereafter more CBC's were taken. The pulse rate increased from a base line of 130 to 170 per minute, the spleen diminished in size by 2 inches, and all formed elements of the blood increased. The pretest WBC count was 2500/cu mm. Following administration of the epinephrine and after the pulse rate increased and the spleen contracted, the WBC increased to 9000 per cu mm.

Base line RBC was 2.1 million and increased to 2.9 million/cu mm. The base line for reticulocytes was 3.1%; these increased to 7.4%. Blood platelets increased from a base line of 68,970 to 160,600. This was interpreted as definite evidence of splenic pancellular hypersequestration. Subsequent splenectomy in this patient confirmed the validity of the preoperative interpretations; the cytopenia was due to splenic hypersequestration in the face of bone marrow hyperplasia.

#### Technic of the Epinephrine Test\*

During a 15 to 30-minute base line period, under basal metabolic conditions, the rate and quality of the pulse, blood pressure, and two preliminary complete peripheral blood studies are obtained and the splenic outline is traced. Depending upon the age and vascular integrity of the patient, 0.5 to 1.0 ml of sterile 1:1000 epinephrine chloride is injected subcutaneously. (In a child, 0.1 to 0.5 ml of 1:1000 epinephrine chloride dosage should be sufficient depending on the age and body weight.) Blood studies are repeated at 2 to 10-minute intervals until the pulse and blood pressure reach their maximum stimulation which usually coincides with the greatest contraction of the spleen and, therefore, the maximum increase in circulating blood cells. The peripheral blood studies are then continued at 5 to 15-minutes intervals until the spleen has completely relaxed, and the circulating blood elements have completed a diphasic curve, reflecting in order: (1) splenic tonus, (2) contraction, (3) hyperrelaxation, and (4) reestablishment of tonus.

#### Summary

A method of determining primary and secondary hypersplenism has been described. It is a simple and concise method of demonstrating the functions of the spleen in hypersplenism.

\* Wright, Claude-Starr; Doan, Charles A.; Bouroncle, Bertha A.; Zollinger, Robert M.: Direct Splenic Arterial and Venous Blood Studies in the Hypersplenic Syndromes Before and After Epinephrine. *Blood* 6:195, 1961.

#### References

1. Charles A. Doan MD, Professor of Medicine, Ohio State University.
2. Outline of Technics Used in Hematology Division, Department of Medicine, Ohio State University, page 1.

\* \* \* \* \*



## MISCELLANY

### Premature Rupture of Membranes

CAPT T. B. Lebherz MC USN, Chief of Obstetrics-Gynecology Service, USNH, NNMC, Bethesda, Md. The Collected Letters of the International Correspondence Society of Obstetricians and Gynecologists, May 1, 1962.

A study of the OB dilemma of premature rupture of the membranes has just been completed in an 18 Naval Hospital Study. Demethylchlortetracycline was used in a double-blind management of the problem, and the material coded and analyzed on electronic data tabulators.

In a 12-month period, 25,427 deliveries were accomplished and premature rupture of the membranes occurred 11.5% of the time; 85% of the cases developed labor within 72 hours. By random number method, 941 received placebo and 955 active drug. Prematurity was found to be present 20.1% of the time vs 6.1% when membranes were intact.

The perinatal death rate for infants with premature rupture of the membranes was 28/1000 vs 16/1000 when intact. With 95% autopsy material, sepsis was found to be the cause of death 25% of the time with premature rupture of the membranes vs 1% with intact membranes. When the material was subdivided by latent period, a definite and progressive increase in these two factors was evident with increased time lapse. When the code was broken, no favorable therapeutic effect could be attributed to active drug as far as infant mortality and infant sepsis was concerned.

When the data cards were analyzed for postpartum morbidity, a very significant variable was evident, a 3.5% rate for the drug group vs 7.3% in the placebo group. Further analysis, by reason of endometritis and parametritis, accounted for 1.4% of this variable and pyelonephritis for 1.4%. Because this apparent indication for prophylactic antibiotic therapy did not seem in keeping with current thinking, we had the statistician carefully scrutinize and analyze the data and no matter what he did the same conclusion always resulted.

In the current study, the diagnosis of premature rupture of the membranes, with the subsequent artificial rupture of the membranes, occurred 79 times. These cases were not included in the study as it was felt that this was the leakage of fluid from a bag of forewaters. The confirmation of premature rupture of membranes was made by the protein crystallization method.

In summary, we feel increased prematurity and perinatal death rates, especially by reason of sepsis, are the main infant problems of premature

rupture of the membranes, and that prophylactic Demethylchlortetracycline does not change the problem. However, we also feel that this drug given anti-partum, intrapartum, and for 3 days postpartum, will favorably affect postpartum morbidity, especially as far as endometritis, parametritis, and pyelonephritis are concerned.

The study of premature rupture of the membranes has been under way in the U.S. Navy since 1957. Each year only one variable can be interjected. The next variable, on a random selection method, is to be the induction of labor in those patients with premature rupture of the membranes who are 37 or more weeks pregnant.

\* \* \* \* \*

#### The Pathogenesis of Gout\*

Leif B. Sorensen MD, Department of Medicine, University of Chicago,  
950 E. 59th St., Chicago, Ill.

Since Garrod's original observation in 1848 that excessive amounts of serum uric acid were present in gouty patients, there has been widespread agreement that gout is attributable to a sustained accumulation of uric acid in the body. The author believes that if a patient has a sufficient degree of hyperuricemia for a long enough period he will eventually develop gout, irrespective of the nature of the hyperuricemia. This, then, implies that the clinical syndrome of gout comprises several distinct entities. The accumulation of uric acid must result from a disturbance in the normal equilibrium between the production of uric acid on one hand and the elimination of urate on the other. As a consequence, hyperuricemia will occur in the following circumstances:

When the production of urate is so great that, even though the routes of elimination are of normal capacity, they are inadequate to handle the excessive load.

When the capacity for elimination of uric acid is so reduced that a normal sized production of uric acid cannot be disposed of.

For discussion of the normal pathways in the metabolism of uric acid, the reader is referred to a recent review of the subject published by the author: (The Elimination of Uric Acid in Man Studied by Means of C<sup>14</sup>-Labeled Uric Acid, Uricolysis. Scand J Clin Lab Invest, Suppl 54, 1960)

Isotopic technics permit accurate measurements of the miscible pool and turnover rate of uric acid. The miscible pool is defined as the quantity of urates in the body capable of mixing promptly with intravenously injected isotope-labeled uric acid. The miscible pool averages about 1200 mg in normal

\* From the Argonne Cancer Research Hospital, operated by The University of Chicago for the U.S. Atomic Energy Commission and the Department of Medicine, The University of Chicago.

males. The turnover rate is a measure of the fraction of all the uric acid which is replaced per unit time. The endogenous urate production amounts to 600 to 700 mg per day in healthy males.

An excessive intake of purines does not ordinarily play any role in the pathogenesis of gout, although in the days when the treatment of pernicious anemia consisted of oral administration of as much as one pound of fresh liver daily, acute gout occasionally developed in such patients after several weeks of treatment. It is of interest that when normal subjects were fed uric acid precursors (4 Gm of ribose nucleic acids daily for 3 to 5 days), their plasma urate levels increased to the range found in patients with gout.

Neither does extrarenal elimination play a role in the development of hyperuricemia; on the contrary, there appears to be a compensatory increase in the extrarenal excretion of uric acid in many patients with hyperuricemia. In two patients with impaired kidney function the recovery from urine of intravenously injected uric acid-C<sub>14</sub> amounted to only 24% and 29% of the administered dose after 7 days. The extrarenal excretion is low in patients with Wilson's disease where there is a functional impairment in the renal reabsorption of uric acid by the tubules.

A discussion in outline form of the various types of gout is attempted. Abstracts of cases in each group are presented, also a report of studies on the miscible pool and turnover of uric acid, the incorporation of glycine into uric acid, and inulin and urate clearances. The studies indicate that primary gout can be divided into two types:

(a) Primary metabolic gout, characterized by over production of uric acid, abnormally high urinary output of urate, and a more rapid and extensive incorporation of glycine into uric acid.

(b) Primary renal gout which is inherent to a dysfunction in the enzymatic transport mechanism of urate through the renal tubules with the result that a smaller percentage of the filtered urate is excreted in the bladder urine. There is a normal sized production of uric acid, and the incorporation of glycine into uric acid follows a normal pattern. Discrete renal function studies reveal a clearance ratio of urate:inulin lower than in normal subjects.

Three types of secondary gout have been identified:

(a) Secondary to blood dyscrasias associated with an increased breakdown of nucleic acids in cellular destruction. Here, production of uric acid is increased, and there is an excessive but slow incorporation of glycine into uric acid.

(b) Secondary to renal disease in which there is a reduced glomerular filtration rate.

(c) Drug-induced gout in which a drug (e.g., chlorothiazide) blocks the renal tubular secretion of uric acid.

DEPARTMENT OF THE NAVY  
Bureau of Medicine and Surgery  
Washington 25, D. C.

BUMED 5120  
BUMED-3B-fms  
11 May 1962

BUMED NOTICE 5120

From: Chief, Bureau of Medicine and Surgery  
To: All BUMED Managed Activities

Subj: U. S. Savings Bond Program

Ref: (a) SECNAVNOTE 5120 of 14 Feb 1962

1. Purpose. The purpose of this Notice is to encourage support from military and civilian personnel for this year's annual Savings Bond Campaign - Freedom Bond Drive, announced by reference (a), and to stimulate thought as to the benefits that would be gained by our country and by military and civilian personnel through greater participation.

2. Discussion

a. The average participation rate for BUMED managed activities is 52.8 percent.

b. The overall Department of the Navy's current participation rate is 68 percent.

c. We, who are in or associated with the military service, have a greater appreciation of the necessity to keep our country militarily and economically strong. It is our obligation to see that our two basic strengths, military and economic, flourish side by side. Our military strength must be backed by a strong and growing economy. Dynamic economic growth requires capital. Capital requires savings. The Savings Bond Program plays a most important part in the power of our national economy and the economy of the individual.

3. Action. Commanding officers and officers in charge are requested to give personal attention to help in raising the participation rate by conducting a systematic person-to-person canvass of all nonparticipating personnel.

4. Cancellation. This Notice is canceled when appropriate action has been taken, and for record purposes on 30 June 1962.

*A.S. Chrisman*  
A. S. CHRISMAN  
Acting

Copy to: CINCIANTFLT, CINCPACFLT, DDAS-DDOS-RCDOS, DMOS&RCMOS, NDS&RCS, SEAFRONS

Boston to Host Occupational Health Congress

Physicians and industrial health experts from all sections of the nation will gather in Boston, October 2 - 3, for the 22nd Congress on Occupational Health. The two-day meeting at the Somerset Hotel is sponsored by the American Medical Association's Council on Occupational Health.

The national congress serves as a meeting for the formal presentation of scientific papers on occupational health as well as a forum in which occupational health problems can receive the attention of acknowledged experts in this field.

Subjects to be discussed in scientific presentations include History and Problems of Occupational Health in New England, Small Plant Occupational Health Programs, Confidentiality of Occupational Health Records, Human Factors in Accidents, Mental and Emotional Problems in the Worker, and Occupational Health and Workmen's Compensation Problems Posed by Handicapped Workers.

Additional information about the conference may be obtained by writing to the Council on Occupational Health, American Medical Association, 535 N. Dearborn St., Chicago 10, Ill. (AMA News Release)

\* \* \* \* \*

Naval Medical Research Reports

U. S. Naval Medical Research Laboratory, U. S. Naval Submarine Base, New London, Conn.

1. Effect of Spectacles and Contact Lenses on the Rayleigh Equation  
MR 005. 14-1001-1.23 Report No. 356, 15 May 1961.
2. Airborne Sound Pressure Levels Aboard USS THEODORE ROOSEVELT (SS(B)N-600) MR 005. 14-1200.03 Memorandum Report No. 61-7, 20 June 1961.
3. Antarctic Stress and Vitamin Requirements MR 005. 12-5220-2.11 Report No. 375, 16 February 1962.
4. The Cytochemistry of Anoxic and Anoxic-Ischemic Encephalopathy in Rats. III. Alterations in the Neuronal Golgi Apparatus Identified by Nucleoside Diphosphatase Activity MR 005. 14-3002-03 Report No. 376, 16 Feb. 1962.
5. Relative Red-Green Sensitivity as a Function of Retinal Position  
MR 005. 14-1001-1.27 Report No. 377, 28 February 1962.
6. Steps Toward an International Audiometric Zero MR 005. 14-1200.01 Memorandum Report No. 62-1, 14 March 1962.

Air Crew Equipment Laboratory, Naval Air Material Center, U. S. Naval Base, Philadelphia 12, Pa.

1. Objective Measurements of the Fatiguing Effects of Wearing a Full Pressure Suit (Psychomotor Performance During Massed and Spaced Learning on a Complex Task) MR 005. 13-1006.6, 27 April 1962.

\* \* \* \* \*

From the Note Book

BuMed Exhibit on Industrial Hygiene. The Bureau of Medicine and Surgery presented an exhibit, Industrial Hygiene, U.S. Navy, at the annual American Industrial Hygiene Conference held in Washington, D.C., 14 - 17 May 1962. More than 1500 delegates from private industry, universities, and government agencies attended this conference. Forty military and Civil Service personnel working in occupational medicine and industrial hygiene with the medical departments of the shipyards, naval air stations, and ordnance plants of the U.S. Navy also attended.

The BuMed exhibit has the Medical Department, U.S. Navy Diorama as the background with photographs of sailors at work aboard a Tender. Actions are shown of common industrial occupations, such as welding and painting. Other photographs depict exotic occupational health hazards inherent in modern weapons (such as shipboard firing of missiles). The high professional quality of the industrial hygiene services is subtly illustrated by having the sailors in the photographs properly equipped with respirators, safety spectacles, and other gear required by the occupational situation. The total effect of the Diorama, the Photomontage, and an original painting is excellent. These will convey the fact that the Navy's industrial hygiene program and the people serving in it compare with the best in the United States. (TIO, BuMed News)

BuMed NC Officers Attend Conventions. The biennial convention of the American Nurses' Association was held in Detroit, Mich., 14 - 18 May 1962 and was followed by the annual convention of the National Student Nurses' Association from 18 - 21 May.

CAPT Ruth A. Erickson NC USN, Director, U.S. Navy Nurse Corps, was an honored guest of the Association at the opening general session of the convention at which Abraham Ribicoff, Secretary of the Department of Health, Education, and Welfare, was the featured speaker.

LCDR Ouida Upchurch NC USN, Standards and Training Officer, represented the Nurse Corps on the Federal Council of Nursing Services Program meeting, Federal Nursing Around the World. In a panel discussion, Miss Upchurch reported on the Navy's training programs offered to military nurses from foreign countries which contribute to improved nursing practice throughout the world.

CDR Burdette Blaska NC USN, Procurement and Information Officer, represented the Nurse Corps at the convention of the Student Nurses' Assn.

CDR Mary Grimes NC USNR, Head, Nurse Corps Reserve Liaison Branch, also attended the convention.

A new professional exhibit prepared by the Audio-Visual Branch of BuMed was presented at the American Nurses' Association convention, and was well received by both military and civilian nurses.

\* \* \* \* \*

**ARE YOU A SECURITY LIABILITY OR A SECURITY ASSET?**

Test yourself—in all honesty  
True or False

1. The rules which govern security of classified matter are written to meet every situation which may arise.
2. A man who enters a room containing a locked Top Secret safe is considered to have access to that safe.
3. Overclassification of naval information causes difficulty in the maintenance and enforcement of security control.
4. A recipient of classified matter may change its classification.
5. Since commands and individuals must be guided by the primary objectives of security, local situations should not require additional directives or regulations.
6. If the unauthorized disclosure of certain information would be prejudicial to the interests or prestige of the nation, or would be of advantage to a foreign nation, that information would be classified confidential.
7. Security is a state of inviolability achieved by preventing unauthorized persons from having access to classified information, and by establishing measures of protection of such information from hostile acts or influences.
8. Under the Automatic, Time-phased downgrading and declassification system, a classified document on intelligence and counterintelligence planning would normally fall under Group 3.
9. Personnel working with Confidential matter in a restricted area do not need to stow that matter when vacating the room if they are going to be gone only a few minutes.
10. The lettering used to indicate the classification of a document should be larger than the normal lettering used in the text of the document.

(Answers appear below)

Add your score. If you have 10 correct, you are super-security conscious. If you have 8 correct, you are "fair-to-middlin." If you have less than 7 correct, you are security UN-conscious.

(Naval Training Bulletin, NavPers 14900 - Bureau of Naval Personnel. Winter 1961 - 1962)

1-E, 2-E, 3-T, 4-F, 5-F, 6-T, 7-T, 8-T, 9-F, 10-T

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DENTAL

SECTION



Dental Anesthesia and Hypoxia

**Editorial.** Lancet 7185:1040-1041, 13 May 1961. Dental Abstracts 7(3):173-174, March 1962.

Dental anesthesia with nitrous oxide and oxygen no longer is regarded as an innocuous procedure. Even transient hypoxia is now known to cause cerebral damage, and nitrous oxide is such a weak anesthetic that the point at which anesthesia passes into partial asphyxia is hard to determine.

Bourne has drawn attention to the hazards of gas-oxygen anesthesia in the dental chair, in which the sitting position disposes the patient to syncope. The mortality may be low but the incidence of cerebral damage is unknown.

Few anesthetic machines will deliver a constant mixture of gases at different flow rates and pressures. The patient and not the dial reading on the machine is the true guide to the depth of anesthesia; but in a patient with a low hemoglobin level, almost imperceptible cyanosis may denote dangerous hypoxia.

Adjuvants, such as halothane or trichloroethylene, may be used; but these are potent anesthetics, to be used with great precautions.

Mastert (1958) recommended preoxygenation before dental anesthesia, to ensure more rapid induction and longer and smoother maintenance. Klock (1951) showed that there was a plane of surgical anesthesia between Guedel's stage I (analgesia) and stage II (excitement). This Klock called the stage of "amnalgesia."

Roberts (1961) has developed a technic combining those of Mastert and Klock. Twenty breaths of pure oxygen at 0 to 5 mm of mercury are given, then 6 to 8 breaths of pure nitrous oxide. Twenty breaths of a mixture of 12% oxygen and 88% nitrous oxide at a pressure of 10 mm mercury next are given. The operation then may be started. Roberts found that with this technic cyanosis does not occur and recovery is rapid. The method seems to merit extended trial.

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**RAdm Wald Visits Great Lakes.** During a two-week tour of active duty for training in the Dental Division, Bureau of Medicine and Surgery, RAdm Samuel Wald DC USNR visited the U.S. Naval Training Center at Great Lakes and conducted a survey of the effectiveness of the Center's dental facilities. Adm Wald is a resident of New York City.

Effects of Full-Mouth Extraction  
on Oral Microorganisms

I. L. Shklair and M. A. Mazzarella, U. S. Naval Training Station, Great Lakes, Ill. Dental Progress 1:275-280, July 1961. Dental Abstracts 7(3): 156, March 1962.

This study was made of the incidence of lactobacilli, yeasts, *Streptococcus salivarius* and *staphylococci* present in 9 young naval recruits, before full-mouth extraction, during the edentulous period, and after complete dentures were in place. The afore-mentioned microorganisms were selected for study because of their acid-production potential and because they have been implicated in caries development.

Although there was a great deal of variation between patients in the incidence of the organisms, all patients followed the same pattern of microbiologic change.

During the edentulous period there were so few lactobacilli and yeasts that they could not be isolated from saliva at the minimal dilutions. At the same time, the number of streptococci increased; although the average increase for the 9 patients was not striking because of the wide variation from patient to patient, the increase was evident in individual patients. This increase in streptococci was maintained for the first 2 weeks the dentures were worn, even as the lactobacilli and yeasts gradually returned. Within 3 to 5 weeks after denture placement, however, the microorganisms stabilized at pre-extraction levels. As the lactobacilli and yeasts increased to their pre-extraction levels, the streptococci decreased. *Staphylococci* showed only normal variations throughout the study; they were not affected by extraction of teeth or denture insertion. Two patients who apparently had no yeasts in the pre-extraction period had them within 3 weeks after they began wearing dentures.

Although the reasons for the changes in oral flora resulting from full-mouth extractions are not known, several interesting speculations can be made. Kostecka (1924) observed that the loss of teeth induced a shift from an anaerobic to an aerobic microbiota, which indicated there was a change in the oxidation reduction potential (Eh) of the mouth from a negative to a positive value. The Eh may be more favorable for the streptococci than for the lactobacilli during the edentulous period and during the first two weeks of denture wearing, when the lactobacilli are at low or undetectable levels and the streptococci are at high levels.

The dentures may be a means of food entrapment, which the lactobacilli require for growth.

Another reason for the disappearance of the lactobacilli may be that they develop into L-forms during the unfavorable edentulous period but revert to bacterial form when dentures are worn and food is entrapped.

Yeast can function either aerobically or anaerobically, and therefore it does not seem likely that they would be influenced by changes in Eh.

When these functions are interpreted and correlated with findings of studies showing the differences in acidogenic populations found in the saliva and the dental plaque material of caries-immune and caries-rampant patients, it is evident that wearers of partial dentures and complete dentures should be advised of the benefits of scrupulous habits of oral hygiene. Such habits can keep aciduric bacteria and yeasts at low levels and help prevent caries and denture sore mouth.

\* \* \* \* \*

#### Efficiency of Toothbrushing in Preventing Dental Calculi Deposits in Cats

R. L. Richardson, State University of Iowa, Iowa City. IADR Abstracts of the 40th General Meeting, March 1962, pp. 16, Article 58.

The calcium content of the calculi accumulating in 18 weeks on the buccal surfaces of the posterior teeth of right and left sides were determined for 20 cats maintained in the laboratory. No significant difference was noted between the mean calcium values of the two sides, (right side  $x = 1.07$  mg; left side  $x = 1.08$  mg). Cats were kept in the laboratory 18 months previous to the toothbrushing study. Throughout the study all cats were fed the same diet, which was presumably nutritionally good. The day before the toothbrushing was started the teeth of each cat were scaled and polished, while the animal was anesthetized. The buccal surfaces of the teeth of 7 cats were brushed on the left side once each day for 18 weeks; a soft nylon-bristled toothbrush wet with water was used, and cats were in a normal conscious state. Nothing was done to the teeth on the right side. After 18 weeks the calculi accumulating on the buccal surfaces of the posterior teeth were harvested, and the ash weight and calcium content of the calculi obtained from each side determined. Results showed that 97% less calculi accumulated on the brushed teeth, as compared to that which accumulated on the unbrushed teeth. The mean calcium content of the calculi from the brushed side was 0.03 mg, compared to a mean of 1.33 mg for the unbrushed side. In a similar study using 3 cats and brushing the teeth of one side once each week, 82% less calculi formed as compared with the unbrushed side. The mean calcium content of the calculi for the brushed side was 0.32 mg, while that of the unbrushed side was 1.82 mg.

\* \* \* \* \*

#### Personnel and Professional Notes

Texts Presented to Trust Territory Commissioners. About 50 superseded dental and medical textbooks were recently presented by Captain M. J. Brandt, DC, USN, Commanding Officer, U. S. Naval Dental Clinic, Guam, Marianas Islands, to Mr. M. W. Goding and Mr. J. A. Benitez, Commissioner and Deputy Commissioner, respectively, for the Trust Territory Islands on behalf of the Medical Department of the Navy.

The books were requested by Mr. Benitez during his recent visit with Rear Admiral E. C. Kenney, MC, USN, Surgeon General of the Navy, and Rear Admiral C. W. Schantz, DC, USN, Assistant Chief of the Bureau of Medicine and Surgery (Dentistry) and Chief, Dental Division.

The books will be utilized in the training of Trust Territory dentists. Rear Admiral J. C. Coyle, Jr., USN, Commander Naval Forces, Marianas, participated in the presentation.

#### Newly Standardized Dental Items.

FSN	Nomenclature	Unit Issue	Unit Price
6520-754-2769	Rubber Dam, Medium, 6 inch square, 36's	Pkg	1.30
6520-754-2770	Rubber Dam, Heavy, 6 inch square, 36's	Pkg	1.40
6520-817-2297	Band set, Matrix, Dental, Tofflemire, Set of 12	Set	.24

BUMED Notice 6600 of 18 May 1962 - Subj: Dental Service Report, DD 477;  
Changes to. This Notice transmits a 10-digit electronic accounting machine (EAM) processing code for activity identification and modifies certain other reporting procedures. Among the reporting procedure changes are:

Line 52, Total Patients Treated. Discontinue recording total number of patients treated. Report Total Sittings on this line. A sitting shall be recorded each time a patient is seated to receive an examination, consultation, or any form of treatment or any combination thereof. Several procedures will usually be accomplished during one sitting; therefore, Total Procedures (line 51) will usually be greater, but never less than Total Sittings (line 52). A patient counted as a sitting in one office and, during the same appointment is seated in other offices, shall be counted as a sitting by each office. Patients having x-rays taken shall not be considered as a sitting.

Part IV, Remarks. In addition to the requirements of the ManMed Dept., the following information, in the format shown, shall be recorded:

Total Dental Officer Workdays During Reporting Period.....  
 (Example: 2DO's x 66 WD's = 132 WD's, 1 DO x 18 WD's = 18 WD's      Total DO Workdays: 150)

Dental Officer Workdays Lost Due to Collateral Duty.....

Dental Officer Workdays Lost Due to All Other Causes.....  
 (Include in above - annual leave, illness, TAD, equipment failure, etc.)

Total Dental Officer Days Worked.....

Total Number of Dependents Authorized to Receive Out-patient Dental Care, (Estimate if not known).....

Total Dental Officer Days Worked shall reflect the total number of dental officer days worked to accomplish the procedures reported on the dental service report. Dental Officer Days Worked shall include the Dental Officer Work Days of those Dental Officers, who are attached to other activities (VF's, VAW's, MCB's, etc.) but whose procedures are included in the reporting activity's report. Mobile Dental Units shall report as separate activities.

Activities that render routine outpatient dental care to authorized dependents include those activities designated as "Remote Areas" and outside U. S. Shore Activities. Other activities are not required to report this information.

The effective date of these changes is 1 July 1962.

\* \* \* \* \*

Revised Dental Technician Manual. The revised Navy Training Course, Dental Technician, General, NAVPERS 10686-B, is now available through normal supply channels. This revised manual is intended to serve as a reference text for students undergoing dental technician training, as a ready guide for personnel studying for advancement in rating, and as a means to increase the knowledge of the dental assistant, thereby increasing the capabilities of the dentist. This will enable the dentist to concentrate on the more professional services for the patient.

Personal copies of this manual are available from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C., at \$2.00 per copy.

\* \* \* \* \*

DT3 Crescitelli Receives Medal for Heroism. On 10 May 1962, DT3 Peter A. Crescitelli, USN, was awarded the Navy-Marine Corps Medal which is the Navy's highest peace-time award for heroism. The award was made by Colonel Robert L. Cochran, USMC, the Air Facility Commander during ceremonies at the U. S. Marine Corps Air Facility, Jacksonville, North Carolina.

Crescitelli distinguished himself on 26 March 1962 by rescuing an unconscious boy from a burning house. Firemen were fighting the fire and conducting rescue operations when Crescitelli arrived on the scene. Three of the five occupants of the house had been brought to safety and it was not known at the time how many people were in the house. While the rescuers' efforts were deterred by the intense heat and smoke the father was making attempts to re-enter the burning building saying that there were 2 more children inside. Firemen warned that the roof was about to collapse and that any attempt to enter the building would be extremely dangerous. Crescitelli wet down his clothing and dashed into the building. After considerable difficulty he found a boy lying on the floor unconscious. He carried the boy outside and revived him with a resuscitator.

The remaining child was rescued by a Marine fireman but efforts to revive the child failed.

Panel Discussion on Anesthesiology at Naval Dental School. A panel discussion on Anesthesiology was presented to staff, resident and postgraduate Dental officers, and civilian and military guests at the U. S. Naval Dental School, NNMC, Bethesda, Md., on Friday 27 April 1962.

Cdr Philip J. Boyne, DC, USN, of the Oral Surgery Department of the Naval Dental School was the moderator for this panel. The panel consisted of Capt James G. Kurfees, MC, USN, Chief, Anesthesiology Service, U. S. Naval Hospital, NNMC, Bethesda, Md.; Dr. Edward J. Driscoll, Chief, Clinical Investigations Branch, National Institute of Dental Research, National Institutes of Health, Bethesda, Md.; Dr. Leonard M. Monheim, Anesthesiologist at Presbyterian-University Hospital, Pittsburgh, Pa., holder of the National Horace Wells award for outstanding work in modern anesthesiology; Dr. Frank J. Grabill, Consultant in Anesthesiology to the National Medical Center and many other military installations throughout the greater Washington area; and Dr. Robert J. O'Brien, an Oral Surgeon in private practice in Arlington, Va.

Each panelist was given 8 to 10 minutes to cover specific subjects under the general heading of "Anesthesiology." Every panelist had also been furnished with questions which the students of the Naval Dental School had prepared. The questions covered a wide range of material including the use of intravenous barbiturates; the relative merits of atropine and scopolamine in premedication for general anesthesia in the dental in-patient; a discussion of the manifestations of toxic or untoward reactions to the injection of local solutions; and the merits of undertaking long oral rehabilitation procedures in the dental office.

NDS Officers Appear at Meetings. The following Naval Dental School Staff Officers presented lectures as shown:

Capt A. R. Frechette, DC, USN, Diplomate, American Board of Prosthodontics, Commanding Officer, Naval Dental School, lectured on "Improved Partial Dentures" for the Texas State Dental Association, Dallas, Texas. Capt Frechette also spoke before the Academy of Denture Prosthetics, Colorado Springs, Colo. His subject was "Influence of Partial Denture Design on Distribution of Force to Abutment Teeth."

Capt G. W. Ferguson, DC, USN, lectured on "Restorations Using Silver Amalgam" before the Ontario Dental Society, Toronto, Canada.

Cdr L. W. Wachtel, MSC, USN, presented "Chemical Components of Enamel" at Georgetown University, Washington, D. C.

Navy Dental Officers to Appear at Meeting. The following Navy Dental Officers, on duty at the U. S. Naval Dental Clinic, Pearl Harbor, will present table clinics before the Sixtieth Annual Hawaiian State Dental Association Meeting:

LCdr Edward P. Klecinic, DC, USN - Occlusal Considerations in Complete Dentures; Lt Kenji Seo, DC, USN - Electrosterilization in Endodontic Treatment; Lt William D. Kemmel, Jr., DC, USN - Anatomical Matrix Applications; Lt Robert J. Stepnick, DC, USNR - Periodontal Surgery for the General Practitioner.

The meeting will be held on 27 June 1962 at the Princess Kaiulani Meeting House, Honolulu, Hawaii.

## AVIATION MEDICINE DIVISION



### Safety and Survival Equipment Research and Development Division of the Air Crew Equipment Laboratory

One of the 3 technical divisions of the Air Crew Equipment Laboratory (ACEL), Naval Air Material Center, Philadelphia, is the Safety and Survival Equipment Research and Development Division. The division conducts engineering research, design, development and evaluation of safety and survival equipment systems and components for aircrewmen. It engages in research studies in the personal equipment and environmental control and life support system aspects of anticipated space and orbital flight operations. The division provides technical direction relative to equipment systems appropriate to the division's responsibility and acts as a consultant to the Laboratory in appropriate areas.

The division's programs are handled by 3 branch organizations: Pressure Suit Research and Development, Oxygen Equipment Research and Development, and Flight Clothing and Survival Equipment Research and Development. Among a group of available specialized facilities are Altitude Chamber Systems which are second to none. These provide performance that is not available any other place in the country.

The Pressure Suit Branch is responsible for the RDT&E functions of full pressure suit systems. The system is defined as the torso, gloves, boots, disconnects, helmet, breathing gas control system, life preserver, and restraint harnessing sub-systems, and the ground handling sub-systems which include test stands and kits cooling and ventilating auxiliary equipment, etc. The branch has been responsible for the current MK4 full pressure suit system currently being used in Navy high altitude manned weapon systems. Modified versions of this equipment have been accepted for use by ADC of the U. S. Air Force and by the National Aeronautics and Space Administration for use in the "Mercury" project. Mercury Astronaut training in the suit system used in conjunction with a capsule environmental simulator has been conducted. The branch is continuing its efforts to further refine the pressure suit system concept for use in naval operations and working on advanced design concepts of personal full pressure suit protection applicable to space and orbital flight operations. These latter attempts relate to rather unique and extreme approaches in suit configuration and the use of closed circuit environmental control systems using physio-chemical methods to furnish oxygen and control carbon dioxide, water vapor, temperature and gross contamination of the recycled gas mixture.

The Oxygen Equipment Branch is responsible for the RDT&E function of oxygen equipment systems. These systems as defined are the masks and retention equipment, valving, interconnecting tubing, warning equipment, and

the supply containers and component sub-systems, as well as the ground handling sub-systems which include test stands and kits and refilling and servicing equipment. Oxygen is supplied from gaseous, liquid and chemical oxygen sources. In addition, the branch handles the breathing systems for helicopter crewmen whose primary job is to assist in rescuing downed crews. All of the oxygen breathing equipment systems currently being flown, with the exception of full pressure suit systems, are the responsibility of this branch. The branch is continuing efforts to improve the overall breathing systems with respect to comfort, performance and integration. In addition, more efficient technics of liquid oxygen handling and filling have been developed. Relating to space and orbital flight life support and environmental control systems, the branch has been active in the conduct of 2 long term studies wherein 6 volunteers were confined in a work/living compartment of less than 600 cubic feet for 7 days and 8 days respectively. In each investigation, the environment was controlled at pre-determined levels.

The Flight Clothing and Survival Equipment Branch is responsible for the RDT&E function of anti-exposure suits, protective helmets both for jet and patrol type aircraft, flight suits of all types, gloves, boots, sound attenuating helmets, personal protective systems for ABC warfare and other miscellaneous articles of personal survival equipment. In addition, ground support systems for these equipments where necessary are handled by the branch. The branch has developed the MK5 constant wear, ventilated anti-exposure suit configuration which will be introduced to the fleet. Plans are being initiated and some preliminary work is being conducted on an anti-exposure suit which will also provide thermal protection for use in special weapons applications. A series of fabrics and materials were tested, individually and in various combinations, for thermal resistance characteristics under specified loads. The information thus derived was used in designing personnel and equipment protective barriers to high thermal environments. Several full face helmet designs are being investigated and patrol type aircraft protective helmets have been developed. Small evaluation quantities of patrol type helmets embracing various design features have been procured and, based upon fleet comments, a final patrol type helmet design has been formulated. The design characteristics of the full face helmet include the standard head protection, full communication capabilities, oxygen breathing series, ventilation and in-flight feeding port and visor defrosting facilities.

Glove development is being directed along 3 basic channels. Efforts are being applied toward (1) an unlined glove improved from the construction and fit aspects, (2) a waterproof unlined glove, and (3) a waterproof insulated glove.

In general, improvements in all articles of personal protective equipment are continually in process and concurrent short term UR investigations are conducted.

In addition to the previously described functions, the division is responsible for assisting in the preparation of BUWEPS Aviation Clothing and Survival Equipment Bulletins on the various equipment items over which they are cognizant. Close R&D liaison is conducted with other governmental agencies wherein

a mutual interest exists. Further liaison is maintained with ASO and the various contractors in the provisioning and production of equipment items. Liaison is also conducted on production phases with other military supply agencies in standardization areas. —AVMED DIVISION, BUMED.

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#### Hyperventilation or Over-Breathing Syndrome

We have chatted with 4 different Wing flight surgeons during the past few months about several cases of suspected hyperventilation in flight, 2 of which were confirmed in the Low Pressure Chamber. Fortunately, faulty breathing habits were corrected without further difficulty.

Well over 5 years ago, the USAF School of Aviation Medicine stated that "the increasing number of unexplained jet aircraft accidents indicated a need for experimental investigation of possible physiologic factors leading to a pilot's incapacity for safe flying. In addition to hypoxia, hyperventilation was suspected as being a possible cause for deterioration of flying performance. In-flight sampling of expired air during 3 phases of jet training aircraft verified the existence of in-flight hyperventilation. Such instances appeared to become more frequent with the high performance capabilities of the aircraft flown." The following is taken from our 1958 "poop" sheet....it still holds true, and according to the Air Force, may be encountered in increasing frequency:

"Hyperventilation or over-breathing syndrome: It has been stated that about one person in ten who comes to a physician (civilian) for examination has faulty breathing habits. As a result, he suffers discomforts which he or even the doctor attributes to serious organic disease. Symptoms might include dizziness, blurred vision, faintness, palpitations, heaviness in the chest, numbness and tingling of the hands and face, or extreme anxiety and fear.

Most are unaware that they breathe too deeply, yawn or cough excessively, or drag on smokes too rapidly. Try breathing rapidly and deeply several times; you can reproduce any or all of the above symptoms.

If at first you don't succeed, try, try again. Then quit -- there's no use overdoing it.

Hyperventilation sometimes occurs during oxygen breathing. Remember how a few of your mates were affected during Low Pressure Chamber runs? (Apprehension, pressure breathing, etc.) Of utmost importance is the fact that this condition could be confused with hypoxia or oxygen lack. Should there be confusion, check your oxygen equipment, but don't breathe deeply. Remember that hyperventilation is due to reduction of carbon dioxide in the body—not too much oxygen. At times, deep breathing or more rapid breathing is resorted to in an attempt to compensate for a shortage of oxygen at high altitudes. A few words of explanation about the function of carbon dioxide: Breathing too rapidly washes CO<sub>2</sub> out of the blood. CO<sub>2</sub> is a waste gas, and part of the reason for breathing is to get rid of it. But it also performs a useful function in the body.

In order to breathe, the body must have a certain concentration of CO<sub>2</sub> to stimulate the brain respiratory center which controls breathing. You know that it is impossible to hold your breath for an indefinite period. On the other hand, if most of the CO<sub>2</sub> is removed by hyperventilation, the body loses its stimulus to breathe. When this happens, the individual stops breathing until enough CO<sub>2</sub> accumulates in the body to again "trigger" the system."—By Capt R.G. Witwer, MC, USN, Staff Medical Officer, Headquarters, Second Marine Aircraft Wing, Cherry Point, N.C.

\* \* \* \* \*

#### Problems in Acoustic Trauma

High tones and extremely low tones are judged almost universally to be more irritating than those in the middle ranges. Interrupted noises or discontinuous tones are generally found to be the most annoying. In general, any noisy environment will possess a certain nuisance value and will contribute to the production of fatigue and the ensuing loss of efficiency. Although it is true that sustained exposures to the noise levels and frequencies found in aircraft will result in a period of hearing loss followed by complete recovery, the psychological impact of the noise may be far more dangerous than the physiological effect.

In jet operations, most of the high intensity, high frequency noises are encountered during the period immediately prior to take-off. In piston engine aircraft however, the pilot is exposed to prolonged periods of relatively high intensity noise. Frequent voice communication by radio in such environments is generally considered to hasten the onset of fatigue. During the course of such a flight there may be a gradual decrease in auditory acuity which will necessitate an increase in the volume level of radio equipment during the latter stages of such flight. .... NAVTRADEV CEN 1339-28-2.

\* \* \* \* \*

#### Physiology and the Flyer

Education is a continual process, and telling a pilot something once does not make him responsible for its success. It must be demonstrated, discussed, practiced, supervised, and refreshed repeatedly, or flying a million dollar airplane is a gamble and not a profession. This philosophy leads to the requirement that flying personnel should get refresher training in the physiological aspects of high-speed, high-altitude flight every 2 years.

The objective of Naval Air Training is to educate flying personnel so they will be prepared in all respects to cope with the hazards of flight which they may encounter. Physiological training is part of this objective and is further concerned with the very practical mission of ensuring survival at altitude. Advances in technology during the past few years have resulted in the development of highly maneuverable aircraft which can cruise at supersonic speeds,

climb several miles per minute, and operate effectively at 50,000 feet and higher. Man cannot operate these machines without physical aids such as an artificial supply of oxygen and pressurized cabins; he needs devices to protect him against frostbite, extreme forces of acceleration, and the effects of unusual sights and sounds; and he needs knowledge. It behooves a flyer, therefore, to understand not only the mechanical characteristics of his airplane, but also the biological characteristics of the human body under the special conditions imposed by flight. Indifference, ignorance, or carelessness can nullify the foresight, ingenuity and effort involved in supplying him with efficient equipment.

Personnel of the Physiological Training Units have long bemoaned the fact that although aviators and aircrewmen are required to receive regular refresher low pressure chamber runs and aviation physiology lectures, they often have alarming misconceptions of certain abnormalities peculiar to flying, and/or they consider physiological training a waste of time. We realize that a few short hours of classroom and decompression chamber training every couple of years is insufficient time in which to accomplish our mission.

Questions regarding aeromedical problems should be referred to your squadron Flight Surgeon. In-flight cases of hypoxia, bends, hyperventilation, spatial disorientation (vertigo), ear blocks, etc., should be reported so that precautionary methods for the future can be inaugurated and other aviators can benefit from your experience. —D. H. Reid, Lt(jg), MSC, USNR, Aviation Physiologist, NAS Whidbey Island.

\* \* \* \* \*

#### Care of Oxygen Masks

Clean your mask! Your oxygen mask stands between you and hypoxia. It's common sense life insurance to keep it clean. Investigations have repeatedly disclosed that dirt and gummy substances in oxygen masks have been the cause of sticking valves. Why is the dirt present? (1) Too long a period between cleanings (2) Improper cleaning procedures (3) Improper disinfecting procedures (4) Some units are cleaning masks only at 30-day intervals

Cleaning methods: Soap and water are the best and the only materials authorized for cleaning oxygen masks. (Cleaning is, of course, a job for your Parachute Rigger, not your wife!) BACSEB 27-54 states that cleaning shall be carried out as follows: A. Wash check valves, ice shields, mask exhalation valve and mask thoroughly inside and out with lather and warm water. B. Rinse thoroughly in clean, cold water. C. Wash the A-13A compensated mask exhalation valve. Shake out water and allow to dry. Do not blow out valve with compressed air as this may damage it. D. Clean the mask microphone with a damp cloth. E. Dry mask and accessories in a ventilated place. Do not hang mask in sunlight.

Disinfectant: 1:1000 aqueous solution of benzalkonium chloride (Zephran).

Frequency of Cleaning: As frequently as required by the service conditions

Storage: Polyethylene sacks from the laundry are excellent.

—Lt(jg) D. H. Reid, MSC, USNR (see preceding article)

# RESERVE SECTION

**ACTIVE DUTY FOR TRAINING FOR NAVAL RESERVE MEDICAL DEPARTMENT PERSONNEL DURING FISCAL YEAR 1963**  
**ALL QUOTAS ARE FOR 14 DAYS EXCEPT WHERE OTHERWISE INDICATED**

<u>SCHOOL OR COURSE, LOCATION, AND CONVENING DATE/S</u>	<u>NAVAL DISTRICT COMMANDANTS GRANTED QUOTAS</u>	<u>COURSE DESCRIPTION</u>	<u>PERSONNEL ELIGIBLE</u>
<u>SEMINAR - COMBINED SEMINAR FOR COMMANDING OFFICERS, OR THEIR REPRESENTATIVES, OF HOSPITAL CORPS DIVISIONS AND MEDICAL COMPANIES, AND COMMANDANT'S REPRESENTATIVES. (3 days)</u>		To provide indoctrination and orientation in the organization, administration, and operation of the Naval Reserve Program with emphasis on the Medical Components and the Navy Ensign Medical Program. Field trips to naval activities and other facilities will be conducted. A series of meetings will be held between the trainee and officers of the district staffs with a view toward an improved Medical Reserve Program through the exchange of ideas and recommendations.	Staff members of Naval Reserve Medical Units, with priority being given to commanding officers and executive officers in that order.
Bureau of Medicine and Surgery	1		
	3		
10 - 12 July 1962.	4		
	5		
	6		
Headquarters, Ninth Naval District	8		
	9		
24 - 26 July 1962.	11		
	12		
	13		
<u>MILITARY MEDICAL TRAINING</u>	1		2105
U.S. Naval Medical School	3		
National Naval Medical Center	4		2305
Bethesda, Maryland	5		
	6		2905
17 - 30 March 1963	8		
	9		8175
	11		
	12		
	13		
		CNARESTRA	

<u>SCHOOL OR COURSE, LOCATION, AND CONVENING DATE/S</u>	<u>NAVAL DISTRICT COMMANDANTS GRANTED QUOTAS</u>	<u>COURSE DESCRIPTION</u>	<u>PERSONNEL ELIGIBLE</u>
<u>ON-THE-JOB TRAINING - OFFICER</u>			
Any suitable Naval Medical Facility.		On-the-job training in Navy Medical Department operation and organization with emphasis upon preparation of the trainee for potential mobilization duties.	2105 2305 2905 8175
Convening dates to be arranged between the commandant, trainee and CO of training facility.			(Male & Female).
<u>ON-THE- JOB TRAINING IN SUBMARINE MEDICINE</u>	1 3 4 5 6 8 9 11 12 13	On-the-job training presenting an up-to-date review of problems relating to submarine medicine, including recent developments in submarine medicine research.	2105, 2305 Male only.
<u>ON-THE-JOB TRAINING - FIELD MEDICINE</u>	3 4 5 6	Indoctrination in amphibious warfare and field medical practices.	2105 Male only.
Marine Corps Schools Quantico, Va.			
Beginning any Monday morning July through September 1962 and June 1963			

<u>SCHOOL OR COURSE, LOCATION, AND CONVENING DATE/S</u>	<u>NAVAL DISTRICT COMMANDANTS GRANTED QUOTAS</u>	<u>COURSE DESCRIPTION</u>	<u>PERSONNEL ELIGIBLE</u>
<u>FIELD MEDICINE</u>	1	Lectures, demonstrations, and practical exercises to familiarize Reserve Medical personnel with problems usually confronted and techniques to be employed in the application of field medicine. One week is devoted to classroom work and one to field work.	2105
	3		2205
Field Medical Service School	4		2305
Marine Corps Base	5		8175
Camp Lejeune, N. C.	6		8185
5 Aug 1962	8		Group X
16 Sep 1962	9		Group XI
28 Oct 1962			
9 Dec 1962			
3 Feb 1963			
17 Mar 1963			
28 Apr 1963			
10 Jun 1963			
Field Medical Service School	9	Same as above.	Same as above.
Marine Corps Base	11		
Camp Pendleton, Calif.	12		
	13		
2 Sep 1962	14		
21 Oct 1962			
2 Dec 1962			
20 Jan 1963			
3 Mar 1963			
14 Apr 1963			
26 May 1963			

<u>SCHOOL OR COURSE, LOCATION, AND CONVENING DATE/S</u>	<u>NAVAL DISTRICT COMMANDANTS GRANTED QUOTAS</u>	<u>COURSE DESCRIPTION</u>	<u>PERSONNEL ELIGIBLE</u>
<u>ON-THE-JOB TRAINING - HOSPITAL CORPS</u>		Academic and on-the-job individual and group training with a view to qualifying the trainee for advancement in rating and the performance of commensurate duties in the event of mobilization.	Naval Reserve enlisted personnel in, or in training for change in rate to Group X. Personnel must have completed their initial recruit training in accordance with current instructions.
Any suitable Naval Medical Facility as may be determined by the cognizant commandant, preferably a naval hospital			
<u>TISSUE BANK TRAINING COURSE</u>	1 3 4 5 6 8 9 11 12 13	This course provides orientation in the operation and administration of a tissue bank. It includes indoctrination in the methods of tissue procurement; storage and dispensing; tissue culture; tissue chemistry; processing excised tissue and allied short and long-term research projects in the tissue culture and tissue chemistry fields. It also includes indoctrination in the medico-legal aspects of homo-transplantation, the procedure for obtaining permission for tissue donations, familiarization with the operation of the Tissue Bank Registry and all other administrative practices associated with tissue banking.	2105
U.S. Naval Medical School National Naval Medical Center Bethesda, Md.			
Two week course beginning			
1st Monday of July and October 1962.			
1st Monday of January and April 1963.			

<u>SCHOOL OR COURSE, LOCATION, AND CONVENING DATE/S</u>	<u>NAVAL DISTRICT COMMANDANTS GRANTED QUOTAS</u>	<u>COURSE DESCRIPTION</u>	<u>PERSONNEL ELIGIBLE</u>
<u>CASUALTY TREATMENT TRAINING COURSE</u>			
U.S. Naval Hospital Corps School Great Lakes, Illinois	1 3 4 5	Special training in the disciplines of ABC warfare and techniques of management of mass casualties.	Group X, pay grade E-4 and above.
25 Jun 1962 23 Jul 1962 20 Aug 1962	6 8 9		
U.S. Naval Hospital Corps School San Diego, California	8 9 11 12	Same as above.	Same as above.
25 Jun 1962 23 Jul 1962 20 Aug 1962	13		
<u>RECOGNITION AND TREATMENT OF DIVING CASUALTIES</u>	1 3 4	Two week course offering didactic training in underwater physiology and in the recognition and treat- ment of casualties associated with any kind of diving. Instructions include lectures and demonstrations of the equipment of the Deep Sea Divers School and Experimental Diving Unit.	2105 & 2305 Male only.
U.S. Naval School Deep Sea Divers U.S. Naval Weapons Plant Washington, D. C.	5 6 8 9 11		
22 Jul - 4 Aug 1962.	12 13	This is the course given to active duty personnel enroute to stations where there is diving activity and billets are available on a space available basis only.	

<u>SCHOOL OR COURSE, LOCATION, AND CONVENING DATE/S</u>	<u>ND COM QUOTAS</u>	<u>COURSE DESCRIPTION</u>	<u>PERSONNEL ELIGIBLE</u>
<u>MILITARY ENTOMOLOGY</u>			
U.S. Naval Medical School National Naval Medical Center, Bethesda, Md.		1 Two week course in advanced 3 Military Entomology for members of 4 the military services which presents 5 the nature of entomological problems 6 which confront the Armed Forces; to 8 stimulate scientific research in 9 basic and applied problems which 11 require attention. 12 13	2305 with specialties of entomology; parasitology; and biology, with priority to entomolo- gists
30 July 1962.			
<u>DISEASE VECTOR AND ECONOMIC PEST PREVENTION AND CONTROL</u>			<u>MALE ONLY</u>
U.S. Navy Disease Vector Control Center U.S. Naval Air Station Alameda, Calif.		Series of lectures, demonstrations and field exercises related to vector and pest control technology with special reference to naval medical aspects. The role of insects, other arthropods and rodents in the disease vector reservoir host relat- ionships is given careful consideration.	2105 2305 8175 5105 8495
5 Aug thru 18 Aug 1962.		Recognition, identification, biology, and habits of the vectors in relation to pre- vention and control are stressed. The types, procurement, toxicity, safe use, proper choice and application of pesti- cides are discussed. Recent advances and developments are part of the course curri- culum.	Group X enlisted, PO only.
30 Sep " 13 Oct 1962.			
2 Dec " 15 Dec 1962.			
3 Feb " 16 Feb 1963.			
31 Mar " 13 Apr 1963.			
2 Jun " 15 Jun 1963.			

<u>SCHOOL OR COURSE, LOCATION, AND CONVENING DATE/S</u>	<u>NAVAL DISTRICT COMMANDANTS GRANTED QUOTAS</u>	<u>COURSE DESCRIPTION</u>	<u>PERSONNEL ELIGIBLE</u>
U.S. Navy Disease Vector Control Center, U.S. Naval Air Station Jacksonville 12, Fla.	1 3 4 5 6 8 9	Same as above.	Same as above and Women Officer and Enlisted.
12 Aug thru 25 Aug 1962.			
30 Sep " 13 Oct 1962.			
2 Dec " 15 Dec 1962.			
3 Feb " 16 Feb 1963.			
7 Apr " 20 Apr 1963.			
2 Jun " 15 Jun 1963.			
<u>AMPHIBIOUS MEDICAL INDOCTRINATION</u>			
Naval Amphibious School U.S. Naval Amphibious Base Little Creek, Norfolk, Va.	1 3 4 5 6 8 9	To indoctrinate officers and enlisted personnel of the Reserve Medical Department in the basic fundamentals of Amphibious Warfare and the associated medical duties.	<u>MALE ONLY</u>
Course: M-1			
13 Aug 1962.			2105
11 Feb 1963.			2205
		By a series of lectures, demonstrations, training aids, tours and practical work, the student is introduced to Amphibious Warfare and the medical problems that arise during an Amphibious Operation.	2305
			8175
			8185
			Group X and Group XI enlisted.

<u>SCHOOL OR COURSE, LOCATION, AND CONVENING DATE/S</u>	<u>NAVAL DISTRICT COMMANDANTS GRANTED QUOTAS</u>	<u>COURSE DESCRIPTION</u>	<u>PERSONNEL ELIGIBLE</u>
Naval Amphibious School	9	Same as above	Same as above
U.S. Naval Amphibious Base Coronado, San Diego, Cal.	11 12 13 14	(page 39)	(page 39)

Description of the above courses has been excerpted from the Catalogue for Active Duty for Training BuPers, Inst 1571.4H of 11 April 1962—RESERVE DIV., BUMED.

Permit No. 1048

OFFICIAL BUSINESS

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